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SHOOK, HARDY & BACON LLP			BROOKS, JULIAN D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,876	MORRISON ET AL.	
	Examiner	Art Unit	
	JULIAN D. BROOKS	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 18 January 2011.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-13,15-18,21 and 23-31 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-7,9-13,15-17 and 23-31 is/are rejected.

7) Claim(s) 8,18 and 21 is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. _____.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-946)

3) Information Disclosure Statements(s) (PTO/SB/08)
 Paper No(s)/Mail Date 01/19/2011

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____

5) Notice of Informal Patent Application

6) Other: _____

DETAILED ACTION

Response to Amendment

1. Claims 1-24 are pending in this application [03/19/2007].
2. Claims 1-13, 15-18, 21, 23, and 24 have been amended [01/18/2011].
3. Claims 14, 19, 20 and 22 have been cancelled [01/18/2011].
4. Claims 25-31 have been newly added [01/18/2011].
5. Claims 1-13, 15-18, 21 and 23-31 are currently pending [01/18/2011].

Information Disclosure Statement

6. The information disclosure statement (IDS) submitted on 01/19/2011 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement has been considered and a copy is enclosed within this office action.

Claim Objections

7. Claims 4-11 and 16-22 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

8. Examiner's previous rejection of claims 1-2 under 35 U.S.C. 112, first paragraph has been withdrawn in response to Applicant's appropriate amendment to the claim, eliminating the single means.

9. Examiner's previous rejection of claims 1-3 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, has been withdrawn in response to Applicant's appropriate amendment to the claims, which now recite that a image processor as sufficient structure for the claimed "Apparatus".

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

11. **Claim 26, 28 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.**

- Claim 26 recites that "one camera is selected to be one which is angled outward but not an outermost camera of the array", however this is not

supported in the specification. The specification only supports that camera's away from the center camera are angled outward as illustrated in Figure 2. The specification never discloses or recites that an outermost camera is not angled outward. Therefore the claim recites NEW MATTER which and must be removed.

- Claim 28 recites that mosaics from plural cameras are combined as side-by-side for display as strips of a single image, without comparison and mosaic between image frames from different cameras; however this is not supported in the specification. The specification fails to disclose the playing of strips and only discloses displaying the entire mosaic image, and the specification further fails to disclose combining strips "without comparison and mosaicing". Therefore the claims recite NEW MATTER which must be removed.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 1-5, 7, 9, 10, 12-16, 25-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz, U.S. Patent Application Publication No.**

2003/0185340, [herein Frantz], in view of Cutler, Patent Application Publication No, 2003/0234866 A1, filed on 06/21/2002, [herein Cutler].

With respect to claim 1, Frantz discloses "Apparatus for inspecting a moving object" (abstract, moving object corresponds to Frantz's moving vehicle image undercarriage),

"the apparatus comprising: an array of cameras located at predetermined positions relative to one another" (See figures 4 and 5, and Page 5, paragraph 0069), "the cameras in use pointing in the general direction of an object to be inspected" (See figure 5 and Pages 4-5, paragraph 0068, the cameras point upward toward the vehicle); and

"image processor" (See Figure 1, processor corresponds to Frantz's computer), "provided with a second module for constructing a respective mosaic image from the altered image frames of each camera" (Pages 6-7, paragraphs 0095-0103, and Figures 10 & 11, module corresponds to Frantz's processing software).

It is however noted that Frantz fails to disclose "a first module for calibrating the cameras and for altering the perspective of image frames from said cameras", and "wherein cameras in peripheral portions of the array being angled outward compared with cameras toward the center, said perspective correction being performed to correct for the different camera angles for construction of said mosaic image", as claimed.

On the other hand Frantz as modified by Cutler teaches "a first module for calibrating the cameras" (abstract), "and for altering the perspective of image frames

from said cameras" (Page 8, Paragraphs 0092 & 0093, altering perspective corresponds to Cutler's coordinate system mapping), "wherein cameras in peripheral portions of the array being angled outward compared with cameras toward the center" (See Figure 2), "said perspective correction being performed to correct for the different camera angles for construction of said mosaic image" (Page 1, paragraph 0007, Page 8, Paragraphs 0092 & 0093, and See Cutler's cited reference, "Creating full View Panoramic Image Mosaics and Environment Maps", cited below, section 2, specifically which describes that the altering is done with respect to the angle at which the images are captured).

Frantz and Cutler are combinable because they are from similar problem solving areas of image mosaicing images captured from multiple cameras.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the angled imaging and image stitching of Cutler into Frantz.

The motivation for doing so would have been to achieve a predictable result improvement by applying a known technique to a known device. Frantz contains a "base" process of imaging the undercarriage of a vehicle using multiple cameras and combining the separate images into a single mosaic image, which the claimed invention can be seen as an improvement in that the cameras may be angled with respect to each other and the images may be calibrated and have their perspective's altered before combining. Cutler contains a known technique of angling cameras that capture a mosaic image, as well as, calibrating the images and altering the perspective because

of the captured angle that is applicable to the "base" process. Cutler's known technique of angling, calibrating, and perspective altering would have been recognized by one ordinary skill in the art as applicable to the base process of Frantz and the results would have been predictable and resulted in angling the camera's of Frantz's array and accordingly calibrating and altering perspective of the images captured from the cameras in order to perform an accurate stitching which results in an improved process by providing a wider field of view and seamless combination image.

Therefore, it would have been obvious to combine Frantz with Cutler to obtain the invention as specified in claim 1.

With respect to claim 2, Frantz as modified by Cutler teaches "the cameras are housed to be deployed stationary on a road surface below a moving vehicle, the cameras in use pointing generally upward" (Frantz: Page 4, paragraphs 0066-0067, and see Figure 18, Frantz teaches that the vehicle passes over the cameras).

With respect to claim 3, Frantz as modified by Cutler teaches "the cameras are arranged in a linear array" (Frantz: See figures 4 & 5).

With respect to claim 4, Frantz as modified by Cutler teaches "wherein the cameras are arranged to have overlapping fields of view within an expected range of distance to the object to be inspected" (Page 7, paragraph 0110, and See Figures 7 and 17).

With respect to claim 5, Frantz as modified by Cutler teaches "wherein the first module is provided with camera positioning means which calculate an effective position of each of said cameras as a function of one or more of the camera field of view, the angle of the camera to the normal and the perpendicular distance between the camera and the position of the object to be inspected" (Page 5, paragraph 0069, line 1-6, and Page 7, paragraphs 0110-0119).

With respect to claim 7, Frantz as modified by Cutler teaches "wherein the images from each of said cameras are altered to the same scale" (Cutler: Page 8, paragraph 0093).

With respect to claim 9, Frantz as modified by Cutler teaches "wherein the first module includes camera calibration means adapted to correct one or more of: spherical lens distortion, non-equal scaling of pixels, the skew of two image axes from the perpendicular" (Page 7, paragraph 0091 and Page 8, Paragraphs 0094 & 0095).

With respect to claim 10, Frantz as modified by Cutler teaches "wherein the second module is provided with means for comparing successive image frames from one camera in sequence to determine mosaicing parameters which define how image frames are to be overlapped to produce the respective mosaic" (Frantz: Page 7, paragraphs 0099-0101, Frantz strips are created by comparing matching features from successive images from one camera).

With respect to claim 12, Frantz discloses "A method of inspecting an area of a moving object" (Abstract, Frantz inspects an undercarriage of a vehicle),

"the method comprising the steps of: (a) positioning an array of cameras pointing in the general direction of the object, taking n image frames, with each camera as the object passes over the array of camera" (See figures 5,6,10, & 11 and Page 7, paragraph 0099 & 0102);

"(b) acquiring a first frame from the at least one camera" (Page 5, Paragraph 0080, Page 7, paragraph 0099 and figures 14 and 10, acquiring a first frame correspond to Frantz obtaining image 110a for example);

"(c) acquiring the next frame from said at least one camera" (Page 7, paragraph 0099 and figures 14 and 10, acquiring a first frame correspond to Frantz obtaining image 110b for example);

"(e) calculating and storing mosaic parameters for said frames;" (See Figure 14, mosaic parameters correspond to Frantz common image features within the images due to overlapping camera fields and vehicle speed, all of which is stored),

"(g) mosaicing together the n frames from each camera into a single mosaiced image" (Figures 10-12 and 14, and page 7, paragraphs 0099-0102, n frames from at least one camera corresponds to Frantz frames stitched together to create a strip and then a composite image).

It is however noted that Frantz fails to disclose "(d) applying calibration and perspective alterations to said frames"; and thus also fails to disclose

“(f) repeating steps (c) to (e) n-i times”, as claimed by failing to disclose the calibration and perspective alterations. Franz discloses interactively acquiring frames and calculating mosaic parameters for the newly acquired frame, but fails to apply calibration and alterations as claimed and also

“characterized in that cameras in peripheral portions of the array are angled outward compared with cameras toward the center, the perspective correction in said step (d) being performed so as to correct the different camera angles prior to construction of said mosaiced image.

On the other hand Frantz as modified by Cutler teaches “(d) applying calibration” (abstract), “and perspective alterations to said frames” (Page 8, Paragraphs 0092 & 0093, altering perspective corresponds to Cutler’s coordinate system mapping), and thus “(f) repeating steps (c) to (e) n-i times” (Frantz: Page 7, paragraphs 0099-0102 and figure 10, Frantz processes sequential adjacent image frames, therefore by way of illustrated example, three stitching processes are required for the 4 captured images), and

“characterized in that cameras in peripheral portions of the array are angled outward compared with cameras toward the center” (Cutler: See Figure 2), “the perspective correction in said step (d) being performed so as to correct the different camera angles prior to construction of said mosaiced image” (Page 1, paragraph 0007, Page 8, Paragraphs 0092 & 0093, and See Cutler’s cited reference, “Creating full View Panoramic Image Mosaics and Environment Maps”, cited below, section 2, specifically

which describes that the altering is done with respect to the angle at which the images are captured).

Frantz and Cutler are combinable because they are from similar problem solving areas of image mosaicing images captured from multiple cameras.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the angled imaging and image stitching of Cutler into Frantz.

The motivation for doing so would have been to achieve a predictable result improvement by applying a known technique to a known device. Frantz contains a "base" process of imaging the undercarriage of a vehicle using multiple cameras and combining the separate images into a single mosaic image, which the claimed invention can be seen as an improvement in that the cameras may be angled with respect to each other and the images may be calibrated and have their perspective's altered before combining. Cutler contains a known technique of angling cameras that capture a mosaic image, as well as, calibrating the images and altering the perspective because of the captured angle that is applicable to the "base" process. Cutler's known technique of angling, calibrating, and perspective altering would have been recognized by one of ordinary skill in the art as applicable to the base process of Frantz and the results would have been predictable and resulted in angling the camera's of Frantz's array and accordingly calibrating and altering perspective of the images captured from the cameras in order to perform an accurate stitching which results in an improved process by providing a wider field of view and seamless combination image.

Therefore, it would have been obvious to combine Frantz with Cutler to obtain the invention as specified in claim 12.

With respect to claim 13, Frantz as modified by Cutler teaches "wherein the object is the underside of a vehicle the cameras pointing generally upwards from a position on the road surface" (Frantz: See Figures 9-13).

With respect to claim 14, Frantz as modified by Kumar teaches "wherein a plurality of cameras is provided" (See Figure 5), "each located at predetermined positions and angles relative to one another" (See figures 4 and 5, and Page 5, paragraph 0069), "the cameras pointing in the general direction of the object" (See figure 5 and Pages 4-5, paragraph 0068, the cameras point upward toward the vehicle).

With respect to claim 15, Frantz as modified by Cutler teaches "wherein in step (d) an effective position of each of said cameras is calculated as a function of at least one of the camera field of view, the angle of the camera to the normal, and the perpendicular distance between the camera and the position of the object being inspected" (Page 5, paragraph 0069, line 1-6, and Page 7, paragraphs 0110-0119).

With respect to claim 16, Frantz as modified by Cutler teaches "wherein the images from each of said cameras are altered to the same scale" (Cutler: Page 8, paragraph 0093).

With respect to claim 25, Frantz as modified by Cutler teaches "wherein said second module is arranged to use the mosaicing parameters obtained by comparison of image frames from said one camera to determine how successive image frames from the other cameras of the array are to be overlapped to produce said mosaic" (Page 7, paragraphs 0099, 0101, 0102, Corner's of Frantz's images have common features with successive images and images obtained from adjacent cameras).

With respect to claim 26 Frantz as modified by Cutler teaches "wherein said one camera is selected to be one which is angled outward but not an outermost camera of the array" (Cutler: Figure 2)

At the time of invention there had been a recognized need in the art to arrange cameras for mosaic imaging at angles with respect to each other. In view of Frantz' under carriage imaging, and therefore confined space and number of cameras, there were a finite number of identified and predictable solutions to the recognized need which where angling one or any combination of the finite number of cameras in the array of Frantz. One of ordinary skill in the art could have pursued the known potential solution with reasonable expectation of success since any image would have offered a wider field of view and overlap. Therefore, the claimed subject matter would have been obvious to a person having ordinary skill in the art at the time the invention was made.

With respect to claim 27, Frantz as modified by Cutler teaches "wherein the second module is arranged to construct said mosaic by mapping output pixel locations to locations in the image frames prior to perspective correction and using the pixel data of the uncorrected image frames" (Cutler: Page 8, Paragraphs 0092-0093, Cutler's image coordinates are mapped from the input image, prior to the perspective correction, using a set of transformations, furthermore, Cutler's input images are "corrected" but this correction is not pertaining to the claimed correction which pertains to perspective correction).

With respect to claim 28, Frantz as modified by Cutler teaches "wherein the mosaics from plural cameras are combined as side-by-side for display as strips of a single image, without comparison and mosaicing between image frames from different cameras" (Frantz illustrates this in figure 11).

With respect to claim 29 Frantz as modified by Cutler teaches "wherein the edges of said image strips are blended together in said single image" (Cutler: Page 8, paragraph 0097-0098).

With respect to claim 30, Frantz as modified by Cutler teaches "wherein the array of cameras is housed to be portable and operable without alteration of the road surface above which vehicles are to be inspected" Frantz (Page 2, paragraph 0023).

With respect to claim 31, Frantz as modified by Cutler teaches "wherein width of the array of cameras is within the wheel spacing of the vehicle" (See Figure 7, the cameras all reside within the width of the wheel spacing).

14. Claims 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz, U.S. Patent Application Publication No. 2003/0185340, [herein Frantz], Cutler, Patent Application Publication No, 2003/0234866 A1, filed on 06/21/2002, [herein Cutler], as applied to claim 1 above and further in view of Szeliski et al., NPL: "Creating Full View Panoramic Image Mosaics and Environment Maps" published in 1997, [herein Szeliski].

With respect to claim 6, Frantz as modified by Cutler fails to explicitly teach "wherein camera perspective altering means are provided which apply an alteration to the image frame calculated using angle information for each camera", as claimed.

On the other hand Szeliski teaches "wherein camera perspective altering means are provided which apply an alteration to the image frame calculated using angle information for each camera" (Page 252, Section 2, lines 1-16).

It would have been obvious to one of ordinary skill in the art to incorporate perspective altering calculations of Szeliski into Frantz as modified by Cutler because Cutler explicitly suggests that the teachings of Szeliski are utilized see Cutler paragraph 0093 and Page 9, paragraph 0113.

With respect to claim 17, Frantz as modified by Cutler fails to explicitly teach "wherein said perspective alteration applies a correction to the image frame calculated using relative position and angle information for each camera", as claimed.

On the other hand Frantz as modified by Cutler and Szeliski teaches "wherein camera perspective altering means are provided which apply an alteration to the image frame calculated using angle information for each camera" (Cutler: Page 1, paragraph 0007 and Szeliski: Page 252, Section 2, lines 1-16).

It would have been obvious to one of ordinary skill in the art to incorporate perspective altering calculations of Szeliski into Frantz as modified by Cutler because Cutler explicitly suggests that the teachings of Szeliski are utilized see Cutler paragraph 0093 and Page 9, paragraph 0113.

15. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz, U.S. Patent Application Publication No. 2003/0185340, [herein Frantz], Cutler, Patent Application Publication No, 2003/0234866 A1, filed on 06/21/2002, [herein Cutler], as applied to claim 10 above and further in view of Mann et al., Patent No. 5706416, published on 01/06/1998, [herein Mann].

With respect to claim 11, Frantz as modified by Cutler fails to explicitly teach "wherein a Fourier analysis of the images is conducted in order to obtain the translation of x and y pixels relating the image frames", as claimed.

On the other hand Frantz as modified by Cutler and Mann teaches "wherein a Fourier analysis of the images is conducted in order to obtain the translation of x and y pixels relating the image frames" (Mann: Col. 9, lines 56-67 & Col. 10, lines 1-10 respectively, and Col. 10, lines 25-39).

It would have been obvious to one of ordinary skill in the art to incorporate the Fourier analysis for image matching of Mann into Frantz as modified by Cutler because all are directed to the similar field of endeavor of image stitching. Furthermore, motivation for the combination would have been to achieve a predictable improvement result by applying a known technique to a known device. Frantz as modified by Cutler contains a base process of mosaicing images by capturing different image frames with matching edges with respect to successive images, and combining the successive images by identifying the similar pixels the images, which the claimed invention can be seen as an "improvement" in that a Fourier analysis is used to obtain pixel information. Mann contains a known technique of Fourier analysis that obtains pixel translation information for image stitching that is applicable to the base process. Mann's known technique would have been recognized by one skilled in the art as applicable to the base process of Frantz as modified by Cutler and the results would have been predictable and resulted in utilizing a well known in the art Fourier analysis for feature extraction and finding common pixels in adjacent images for the matching of the images which results in an improved process by accounting for sharp edges and contours which images typically have and thus improving comparison as suggested by Mann Col. 9, lines 58-65.

16. Claims 23 and 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frantz, U.S. Patent Application Publication No. 2003/0185340, [herein Frantz], Cutler, Patent Application Publication No, 2003/0234866 A1, filed on 06/21/2002, [herein Cutler], as applied to claim 12 above and further in view of Dickson et al, NPL: Mosaic generation for Under Vehicle Inspection, published 2002, [herein Dickson].

With respect to claim 23, Frantz as modified by Cutler fails to teach "selecting an area of the single mosaiced image and recreating or selecting the frame from which said area of the mosaiced image was created", as claimed.

On the other hand Frantz as modified by Dickson discloses "A method of creating a reference map of an object" (Abstract and Figure 6, map corresponds Dickson's 3D representation of vehicle undercarriage),

"selecting an area of the single mosaiced image and recreating or selecting the frame from which said area of the mosaiced image was created" Pages 254-255, Section 2.2).

Frantz as modified by Cutler and Dickson are combinable because they are from the same field of endeavor which is utilizing a plurality of cameras and image mosaicing to inspect the undercarriage of vehicles.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to incorporate the GUI and mosaic analysis of Dickson into the undercarriage inspection of Frantz as modified by Dickson.

The motivation for doing so would have been to yield a predictable result improvement by applying a known technique to a known device. Frantz as modified by Cutler contains a base process creating a mosaic image from multiple cameras for imaging the undercarriage of a vehicle which the claimed invention can be seen as an "improvement" in that the mosaic image may be analyzed by a user by selecting a particular image frame from the mosaic image. Dickson contains a known technique of utilizing a GUI to allow a user to select an area of the mosaic image and in response view a magnified view via viewing the particular frame. Dickson's GUI would have been recognized by one of ordinary skill in the art as applicable to the base process of Frantz as modified Cutler and the results would have been predictable and resulted in analyzing areas of Frantz's modified mosaic image from more acute angles than present in the perspective mosaic as suggested by Dickson Page 255, Col. 1, lines 7-10. Therefore, it would have been obvious to combine Frantz as modified by Cutler with Dickson to obtain the invention as specified in claim 23.

With respect to claim 24, Frantz as modified by Cutler and Dickson discloses "the area of the single mosaiced image is selected graphically by using a cursor on a computer screen" (see Figure 6).

Allowable Subject Matter

17. Claims 8, 18 and 21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

18. Applicant's arguments, filed on 01/18/2011, under REMARKS, have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JULIAN D. BROOKS whose telephone number is (571)270-3951. The examiner can normally be reached on Monday to Thursday EST 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vikkram Bali can be reached on 571-272-7415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Julian D Brooks/
Examiner, Art Unit 2624

03/17/2011

/VIKKRAM BALI/
Supervisory Patent Examiner, Art Unit 2624